A POPULAR TREATISE ON THE COMMON INDIAN SNAKES.

Illustrated by Coloured Plates and Diagrams

BY

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Part XXV (with Plate XXV and Diagram).

(Continued from page 382 of Volume XXV.)

CALLOPHIS MACCLELLANDI (Reinhardt).

Macclelland's Coral Snake.

Of proteroglyphous colubrines, or colubrines that carry canaliculate poison fangs in the front of their maxillæ there are two sub-families, the *Hydrophiinæ* or sea snakes, and the *Elapinæ* including the cobras, kraits, coral snakes, &c. The *Elapinæ* includes 29 genera, only 5 of which are represented in India. *Callophis* one of the 5, contains 5 species according to Mr. Boulenger's classification, and 4 of these including the subject of this paper occur within Indian limits.

History.—Macclelland's Coral Snake was introduced to scientific notice by Reinhardt in 1844.

Nomenclature. (*a*) *Scientific.*—The generic name initiated by Gray is from the Greek "kalos" beautiful, and "ophis" snake. The specific title conferred by Reinhardt is in honour of Mr. J. Macclelland, a member of the Indian Forest Department, during the middle of the last century.

(*b*) *English.*—Macclelland's Coral Snake. Named in honour of the late Mr. J. Macclelland of the Burma Forest Department.

(*c*) *Vernacular.*—In the Chin Hills Captain Venning says it is one of the snakes called by the natives "sar-vut-saw."

General characters.—It is a little snake chiefly remarkable for its beautiful and very distinctive colouration. The head is flattened and broad, the snout broadly rounded as seen from above, and the neck hardly evident. The nostril is chiefly contained in the anterior nasal shield occupying about two-fourths of its depth. The suture below it passes to the 2nd labial shield, a distinctly rare condition. The eye is rather small, its diameter being rather less than half the length of the snout. The pupil is often not discernable, but in some specimens there is an arc or a ring of ruddy gold that enables one to see that it is round. The body is cylindrical, moderately robust and of even calibre throughout. The tail is

short, usually being only about one-ninth to one-eleventh the total length of the snake.

Identification.—The broad enamel-white band across the head is very distinctive, and quite peculiar to this snake. The most important shield characters to pay attention to are as follows:—(1) The costals which are in 13 rows in the entire body. (2) The suture below the nostril which passes to the 2nd labial. (3) There are 7 supralabials. (4) The temporal shield touches the 5th and 6th supralabials. These points taken together will distinguish it from all other snakes within Indian limits.

Colouration.—(*A*) Variety *typica* is red dorsally, the colour varying in richness from a bright strawberry-red to cherry-red, and more rarely purplish-red. In the flanks these hues are lightest and brightest. From 16 to 35 black rings encircle the body, and 2 to 5 the tail. These rings are frequently interrupted in the flanks. The black may or may not be narrowly outlined with yellow or buff. Each ring involves about two scales in the body length. In a specimen sent me by Captain Venning from the Chin Hills, and in another obtained by Evans and me from the Pegu Yomas a series of small dorso-lateral spots were present in each interspace, and I have rarely seen a similar single series down the spine. The head is shining black with a sharply defined broad ivory-white or more rarely cream-coloured cross-band behind the eyes. The belly is saffron, and the intervals between the rings exhibit large irregularly-shaped black blotches.

(*B*) Variety *univirgatus*.—Differs from *typica* in that a black stripe runs down the spine, and the rings are frequently incomplete near the spine, especially in mid-body. The rings vary from 23 to 32 on the body and 3 to 4 on the tail.

(*C*) Variety *gori*.—Differs from the two preceding in the absence of the black rings and the spinal stripe. There is a series of 27 to 38 small black spots down the spine, usually round, sometimes rather broader than long.

The belly has irregularly-shaped median black spots smaller than in the other two forms.

(*D*) Variety *nigriventer*.—Differs from the above in having a black stripe down the spine as in *univirgatus*, but no rings. A continuous irregular black stripe passes along the middle of the belly.

Habits.—Speaking of the genus, Fayrer says: "Its representatives are sluggish, and allow themselves to be approached with little sign of fear. They are not aggressive, and bite reluctantly." These remarks certainly apply well to the subject under discussion. Venning remarks: "I could never provoke any of them to bite or show temper." The very few living specimens that have come into my hands were most inoffensive, and exhibited no temper in spite of much provocation. The "type" of *gori* resented being handled,

but would not bite any object with which I attempted to irritate it. It merely flattened its body posteriorly, and when I picked it up by the neck secreted poison copiously which collected as a drop in the rostral arch. Through the drop its tongue flickered in and out tremulously.

The fact that there are no records of a bite from this snake though common enough in certain localities, seems to confirm the opinions expressed above as to its placid nature.

It is eminently a jungle as well as a hill species. In all the localities where it is met with, the country is heavily forested. The little specimen Evans and I got in the Pegu Yomas was trodden on by a wounded elephant, and pressed firmly into the soft soil. The trackers discovered it wriggling vainly to extricate itself, and it was practically undamaged. One of Venning's largest specimens was discovered on the parade ground while a game of foot-ball was in progress. It is always found in hills or in their near vicinity. For choice it inhabits a zone at an altitude of about 4,000 to 6,000 feet, but may occur lower. The specimens sent to me by Mr. Gore were from probably about 1,000 feet elevation, but quite close to outliers of the Naga Hills in Assam. Those from the Abor Hills were from a similar elevation.

Food.—Fayrer says that it feeds chiefly on snakes. I have no single record of its diet though more than 50 have passed through my hands.

Breeding, &c.—Very little is known of its breeding habits. A gravid female measuring 1 foot 11 inches that I obtained from Shillong in August 1911, contained 6 eggs, 2 in one ovary, 4 in the other. The longest of these eggs measured $1\frac{5}{16}$ inches by $\frac{7}{16}$ of an inch. When cut into they were found to contain young embryos about 1 to $1\frac{1}{2}$ inches long. It is not certain however that the young are born alive, it may be that the eggs are discharged as such still harbouring young that are destined to hatch some time later, as in the case of some of the tree snakes of the genus *Dendrophis*, and the pit-viper *Lachesis monticola*. The length of the hatchling or young, as the case may be, is not known. The smallest specimen I have seen was $9\frac{1}{4}$ inches.

The anal glands secrete a custard-like material.

Poison.—Little or nothing is known about the virulence of this venom.

No case has been recorded of a bite in the human subject. Fayrer remarks that fowls succumbed to its bite.

Length.—It grows to about 2 feet, but specimens exceeding this are uncommon. I have however had a specimen 2 feet $7\frac{1}{2}$ inches from Burma, and three specimens sent to me from Haka in the Chin Hills by Captain Venning measured 2 feet $5\frac{3}{4}$ inches; 2 feet 6 inches; and 2 feet 8 inches respectively.

Distribution.—From the Western Himalayas through other mountain ranges to Southern China, and Formosa.

Variety *nigriventer* (Wall).—From the Western Himalayas as far West as Kasauli. Very rare. Only one specimen is known which is in our Society's collection.

Variety *univirgatus* (Gunther).—From Nepal, through the Eastern Himalayas as far East as Sikkim. Fairly abundant in Sikkim.

Variety *typica* (Reinhardt).—Hills of Assam and Burma to South China and Formosa. Annandale has recorded it from the Abor country, Assam, North of the Brahmaputra at about 1,000 feet elevation. It is quite common in the Khasi Hills. Venning found it fairly common in the Chin Hills. There is a specimen in the British Museum from Pegu (presumably Hills), and Evans and I got a specimen from the Pegu Yomas.

I have had it from the Hills in the Southern Shan States (Mogok), and there are specimens in the British Museum from Hills in South China, and Formosa.

Variety *gori* (Wall).—Naga Hills in Assam, and Manipur. Apparently uncommon. Only four specimens are known, three were sent me from Jaipur near the Naga Hills, and one from Manipur.

Lepidosis, Rostral.—Touches 6 shields, the rostro-nasal sutures are about four-thirds the rostro-internasals, and twice or three times the rostro-labials. *Internasals.*—Two, the suture between the fellows about two-thirds that between the præfrontal fellows, and about two-thirds the internaso-præfrontal sutures. *Præfrontals.*—Two, the suture between them equal to, or rather greater than, the præfronto-frontal. *Frontal.*—Touches 6 shields, the fronto-supraocular sutures equal to, or rather less than the fronto-parietals. *Supraoculars.*—About two-thirds the length and breadth of the frontal. *Nasals.*—Two, in contact with the first three labials (rarely first two only). *Loreal.*—Absent. *Præocular.*—One. *Postoculars.*—Two. *Temporal.*—One anterior, touching the 5th and 6th labials only. *Supralabials.*—Seven, the 3rd and 4th touching the eye. *Infralabials.*—Four, the 4th largest, about as long, and twice as broad as the posterior *sublinguals*: touching two scales only behind. *Sublinguals.*—Two subequal pairs, the posterior touching the 4th, or 3rd and 4th *infralabials*. *Costals.*—In 13 rows in the whole body length; smooth; vertebrals not enlarged. *Ventrals.*—182 to 240, more numerous in the ♀. *Anal.*—Divided. *Subcaudals.*—20 to 36 pairs.

Anomalies.—It is not unusual to find a few of the earlier subcaudals entire. I have seen the last ventral divided in one specimen. The 2nd infralabial rarely fails to touch the anterior sublinguals. I have also seen a confluence of the temporal and 6th labial more

than once, and a confluence of the lower postocular and 5th labial at least once.

Dentition.—(From 6 skulls in my collection). *Maxilla.*—Two strong canaliculate fangs anteriorly, no teeth behind. *Palatine.*—6 to 8, decreasing in both directions from the 3rd or 4th; grooved on their inner faces. *Pterygoid.*—2 to 6, small. *Mandible.*—9 to 11, decreasing in size in both directions from about the 4th or 5th; grooved on their outer faces.

Plate.—Our figures are good as regards colouring but incorrect in the following matters. The scale rows are shown as 15 instead of 13. The eye is too small and the iris far more conspicuously golden than is the case in life.

The second subject of this paper belongs to a family as yet not touched upon in these popular series, *viz.*, *Uropeltidæ*.

Family *UROPELTIDÆ*.

(From Greek "oura" tail, and Latin "peltis" shield, referring to the curious terminal shield peculiar to the tails of these snakes). According to Boulenger's scheme of classification this is the fifth of the nine families into which the snakes of the world are divided (Cat. Snakes in Brit. Mus. 1896). All the representatives are to be found exclusively in the Hills of Southern India and Ceylon.

The members of the family are most easily recognised by the breadth of the ventral shields which though distinctly enlarged are not twice the breadth of the last costal row. In this respect they agree with those of one other family, *viz.*, *Ilysiidæ*. The snakes of the latter family however have 6 supralabials, and those of the *Uropeltidæ* only 4.

The family is sub-divided into 7 distinct genera (comprising 42 species), one of which, *viz.*, *Silybura* includes the species dealt with hereafter.

Genus *SILYBURA*.

(From Greek "silubou" a thistle, and "oura" tail, in allusion to the two terminal points on the last caudal shield). At least 22 different species are known.

SILYBURA OCELLATA.

The Ocellate Thistle Tail.

History.—Discovered by the late Colonel Beddome who described it in 1863 from specimens collected by him at Walaghat in the Nilgiri Hills.

Nomenclature (*a*) *Scientific.*—The specific title conferred by Beddome is from the Latin and is a diminutive form of "oculus"

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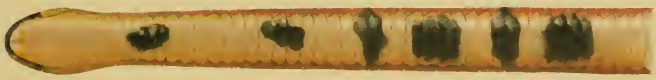

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THE COMMON INDIAN SNAKES. (Wall)

1–3. Callophis macclellandi, var typica, *poisonous*.
4. Silybura occellata. *harmless*.

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an eye. This refers to the many little, round, yellow spots grouped so as to form irregular cross bands on the body.

(*b*) *English.*—The Ocellate Thistle Tail is the equivalent of its scientific designation.

(*c*) *Vernacular.*—Nothing distinctive is known to me.

General characters.—A small snake rarely exceeding 18 inches. The head smaller in girth than the body, tapers to an obtuse point. The nostril is open, and pierced in the front of the nasal shield. The eye is contained in the ocular shield and is small, being about one-third the length of that shield. No neck is indicated, on the contrary this region is swollen, and the body then maintains a similar calibre in its whole length. The tail is short and subtruncate and ends in two small spines placed side by side.

Colour.—The scales are olivaceous-brown, or olivaceous-green at their edges, lighter centrally. The whole body is beset with small round bright yellow spots, grouped so as to form irregular chains across the back, incorporated in rather ill-defined dark crossbars. These bars end subcostally where many spots become confluent to form a yellow patch with an outline like a bunch of grapes. The yellow which is often a bright canary is a very unstable colour dissolving in spirit in a few hours. In some specimens I have found it so intense as to stain the inside of the skin, the muscles, and even the viscera a turmeric yellow. I have seen some specimens with the yellow adornment almost wanting.

Dimensions.—My largest specimen which came from Paralai in the Anamallay Hills measured 17⅛ inches, much the largest measurement I know. ♂ specimens frequently reach 12 to 15 inches, and ♀ 14 to 16 inches.

Identification.—The breadth of the ventrals, *viz.*, about ⅔ that of the last costal row, taken with the two spines placed side by side on the terminal tail shield will establish the genus, but attention to many more points is necessary to identify the species. These are:—

(1) Costals in midbody 17.
(2) Nasals in contact behind the rostral.
(3) Diameter of eye ⅓ or less than ⅓ that of the ocular shield horizontally.
(4) Portion of rostral seen from above longer than its distance from the frontal.
(5) Rostral not more than ⅓ the shielded part of the head.
(6) Ventrals 185 to 234.

Disposition.—I have found it a very inoffensive quiet little creature, allowing itself to be picked up and handled without trying to bite, and with very little show of displeasure. It is a restless little reptile, continually pushing its snout between the clefts of one's fingers as though seeking to hide itself. When

encountered it betrays little or no alarm, and even when given a chance to burrow in loose earth only does so in a quiet leisurely fashion if it does so at all.

Habits.—It lives for choice beneath the soil but is sometimes seen on the surface or only partially submerged. It burrows in loose earth with facility using its snout only for this purpose. I frequently observed specimens in captivity, and never saw the tail used in any way as to suggest its aid in burrowing, and I failed to discover any use for this curiously fashioned appendage.

Food.—The many specimens I have dissected contained in the stomach nothing but earthworms. These are rarely found whole, but in many fragments, suggesting that the worm when seized breaks itself off by its contortions only to be seized again, and lose another instalment. The intestines and cloaca of the snake are invariably loaded with liquid mud derived from the alimentary systems of the worms ingested, and I have no doubt that every snake accounts for a large number of worms weekly.

The sexes.—Of 21 specimens from the Wynaad sexed by me 13 were ♀ and 8 ♂. The female attains to a greater length than the male. The average of my six largest females from the Wynaad was 14½ inches, against 11¾ inches for my six largest males from the same locality. The body is relatively longer, and the ventral shields more numerous in the female, and the tail is relatively shorter with fewer subcaudals in this sex. The terminal caudal shield also shows slight sexual differences. It is rather broader in the ♀, and the terminal spines less well developed than in the ♂.

Breeding.—I have lately ascertained that it is viviparous in habit. The season of birth apparently ends in July in the Nilgiris, and the brood is a small one for an ophidian, *viz.*, 3 to 5. I had two gravid mothers in July measuring respectively 14½ and 11 inches. The former contained 5 fœtuses seemingly fit for birth, the largest of which measured 4½ inches. The latter had 3 embryos, the largest measuring 4⅜ inches. In both cases these were contained in transparent membranous sacs, as one sees in vipers. No other females subsequently received (some dozens) were in a gravid state. I reckon that the smaller mother would be just about 3 years old.

Growth.—The smallest specimens I have had were about 5 inches and my notes make it appear that the young grew from 2 to 3 inches in the first year of life.

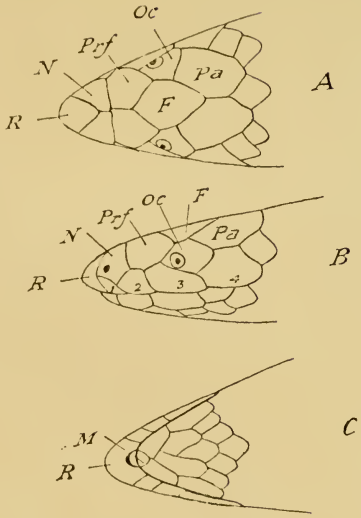
Distribution.—The Nilgiri Hills, Anamallays and conterminous Hills to the South of India between about 2,000 and 4,500 feet elevation. In the Nilgiri Hills this year I obtained 101 specimens all of which came from the Wynaad. The slopes in this locality face West, and it is perhaps remarkable that the slopes facing South and East furnished no single specimen.

EXPLANATION OF DIAGRAM.

An.	Anal.
A. S.	Anterior Sublinguals.
C.	Costals.
F.	Frontal.
I.	Internasals.
M.	Mental.
N.	Nasals.
Oc.	Ocular.
Pa.	Parietals.
Po.	Postoculars.
Pr.	Præocular.
Prf.	Præfrontals.
P. S.	Posterior Sublinguals.
R.	Rostral.
S.	Supraocular.
Spc.	Supracaudals.
Subc.	Subcaudals.
T.	Temporals.
T. Sc.	Terminal Scute.
V.	Ventrals.
1—7.	Supralabials.
1—IV.	Infralabials.

Callophis macclellandi.—A, B, C are three views of the head.

Silybura ocellata.—A, B and C are views of the head shielding. D shows the anal region with ventrals, subcaudals, and $3\frac{1}{2}$ rows of costals visible on each side of the ventrals. E. View of top of tail to show the terminal scute and pluricarinate supracaudals.



Silybura ocellata.
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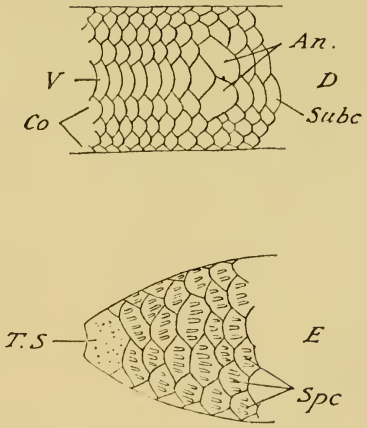

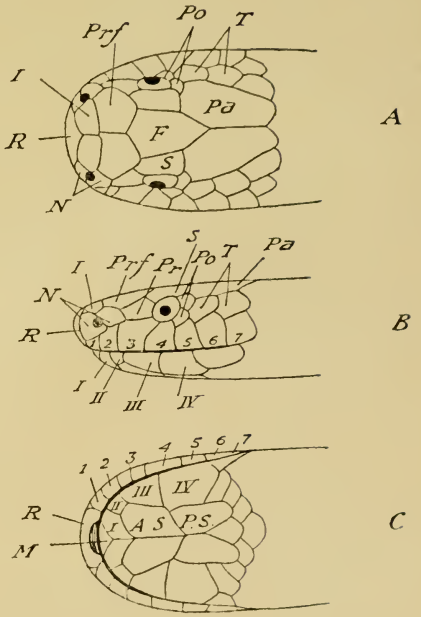

Callophis macclellandi.
(× $2\frac{1}{2}$)

Lepidosis. Rostral.—Touches 4 shields, the rostro-nasal being about twice the length of the rostro-labial; the portion visible from above is greater than its distance to the frontal, and nearly one-fourth the shielded part of the head. *Nasals.*—In contact behind the rostral; touching the 1st and 2nd labials. *Præfrontals.*—In contact with the 2nd and 3rd labials. *Frontal.*—In contact with 6 shields; about as long as the parietals. *Ocular.*—In contact with the 3rd and 4th labials. *Supralabials* 4; the 4th longest. *Sublinguals* absent. *Mental groove* absent. *Costals.*—Broader than long, smooth, with rounded outlines posteriorly; 19 (rarely 21) two heads-lengths behind the head, 17 (rarely 19) in midbody, and 17 (rarely 19) two heads-lengths before the vent. About three heads-lengths behind the head, the rows reduce to 17 by a fusion of the 4th and 5th rows above the ventrals. About three heads-lengths further back the 4th row again divides to establish, 19 for a few rows, and again about two heads-lengths further back the 4th row is again absorbed, and the scale rows then remain 17. *Ventrals.*—About $\frac{3}{2}$ the breadth of the last costal row. In Wynaad specimens they number 185 to 197 in the ♂, and 194 to 208 in the ♀. In Anamallay specimens they range from 214 to 231 in the ♂, and from 218 to 230 in the ♀. *Anal.*—Divided; about twice the breadth of the ventrals. *Subcaudals.*—Divided; 9 to 12 in the ♂, and 6 to 8 in the ♀. *Supracaudals.*—The scales on the subtruncate part of the tail have many keels. *Terminal shield.*—Large and furnished with two points placed side by side.

Anomalies.—One specimen obtained at Paralai had 21 scale rows anteriorly and 17 at midbody and behind. I considered this merely an aberrant specimen of *ocellata* and sent it to the British Museum where my view was confirmed.

I have seen the last ventral sometimes divided.

Dentition.—The maxilla supports 4 to 5 teeth. There are no palatine, or pterygoid teeth. The mandibular series numbers 6 or 7.

(*To be continued.*)